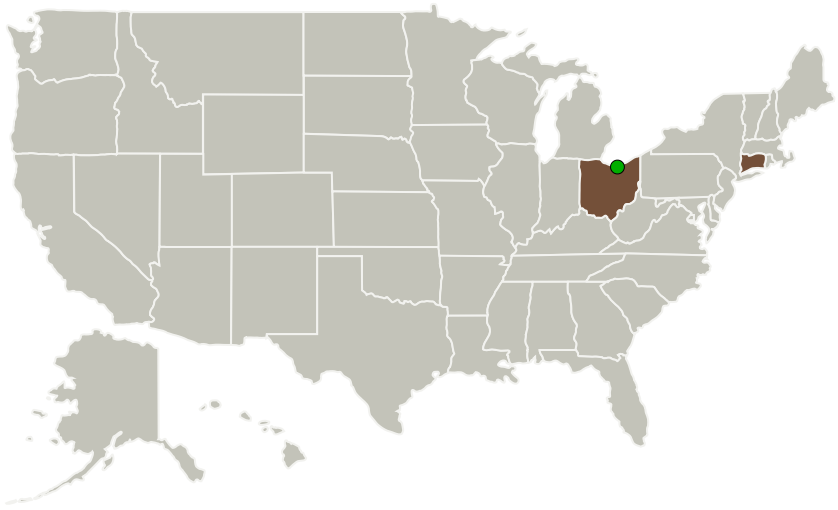
Advanced Passive Liquid Feed PEM Electrolyzer, Phase II

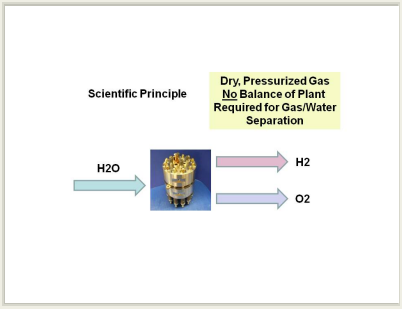
Completed Technology Project (2012 - 2015)

Project Introduction

Proton Exchange Membrane (PEM) water electrolyzers have undergone continuous development for the generation of oxygen and hydrogen for commercial, military and space applications since the 1970's. Unfortunately, conventional technology developed over this time period has required a complex balance of plant that adds to the overall weight of the system package. Research in the past two decades resulted in the creation of systems that minimized balance of plant components, but had significant current density and efficiency limitations, limiting their use. This SBIR program builds upon recent success in the development of a high-pressure electrochemical cell architecture and inserts novel water management technology to generate a passive liquid feed electrolyzer capable of operating at 2,000 psi - and scalable to higher pressures. If successful, implementation of this new technology can save substantially on system weight with a high system operational efficiency and enhanced current density capability.

Primary U.S. Work Locations and Key Partners





Advanced Passive Liquid Feed PEM Electrolyzer Project Image

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Organizations Performing Work	Role	Type	Location
Sustainable Innovations, LLC	Lead Organization	Industry	East Hartford, Connecticut
Glenn Research Center(GRC)	Supporting Organization	NASA Center	Cleveland, Ohio
Skyre Inc	Supporting Organization	Industry Small Disadvantaged Business (SDB)	

Primary U.S. Work Locations	
Connecticut	Ohio

Project Transitions

April 2012: Project Start

January 2015: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137374)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Sustainable Innovations, LLC

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Principal Investigator:

Trent Molter

Co-Investigator:

Trent Molter

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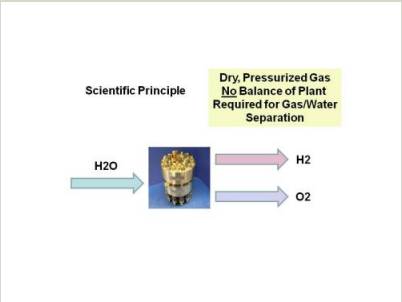
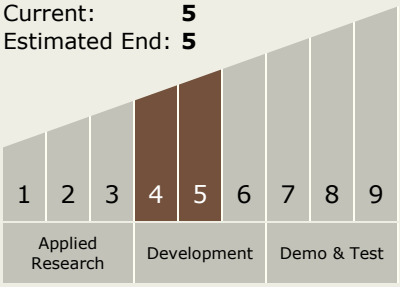
Images



Project Image
Advanced Passive Liquid Feed PEM Electrolyzer Project Image
(https://techport.nasa.gov/image/133339)

Technology Maturity (TRL)

Start: **4**
Current: **5**
Estimated End: **5**



Technology Areas

Primary:

- TX03 Aerospace Power and Energy Storage
  - TX03.2 Energy Storage
    - TX03.2.2 Electrochemical: Fuel Cells

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System